

IBM® Storwize® V7000

Client Presentation

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IBM Chiang Mai

IBM Introduces a New Era in Midrange Disk Systems and Storage Efficiency



IBM Storage is about the smart movement and management of information

IBM Storage Grows Capacity without Complexity

IBM Smarter Planet Vision



The world is flatter and smaller. Now it's becoming smarter.



The world is generating 15 petabytes of data daily.



Information is doubling every 18 months. Storage capacity is growing 45% yr.



80% of new data growth is unstructured content.

How do I create an infrastructure that drives down cost, protects information, and delivers new intelligence to enable smarter business decisions?

Inescapable Data Growth -- Client implications

Data Deluge

2

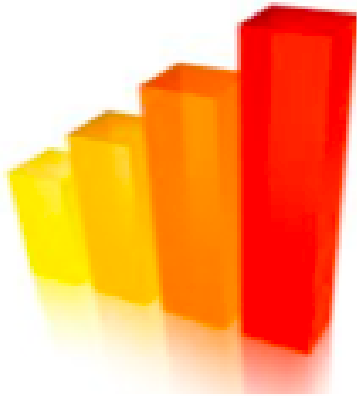


Did You Know?

Estimated Enterprise Data Growth in 5 Years?

650%

80% Will be Unstructured! **Gartner.**



ข้อมูล

การเติบโตของข้อมูล...
ควรจะเอื้อต่อนวัตกรรมใหม่
ไม่ใช่ทำให้ช้าลง!



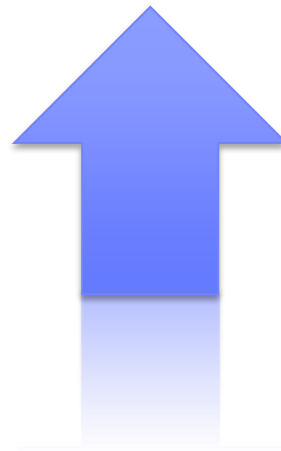
นวัตกรรม

ความท้าทายทางด้านสตอเรจในปัจจุบัน...

ธุรกิจเติบโตขึ้น
ทุกปี



สตอเรจโต
40% ต่อปี



งบประมาณด้านไอที



ธุรกิจควรคาดหวังมากขึ้นจากสตอเรจที่มีอยู่แล้ว?

ธุรกิจควรคาดหวังมากขึ้นจากสตอเรจที่มีอยู่แล้ว?



ประสิทธิภาพที่มากขึ้น

ธุรกิจควรคาดหวังมากขึ้นจากสตอเรจที่มีอยู่แล้ว?



ฉลาดมากขึ้น

ธุรกิจควรคาดหวังมากขึ้นจากสตอเรจที่มีอยู่แล้ว?



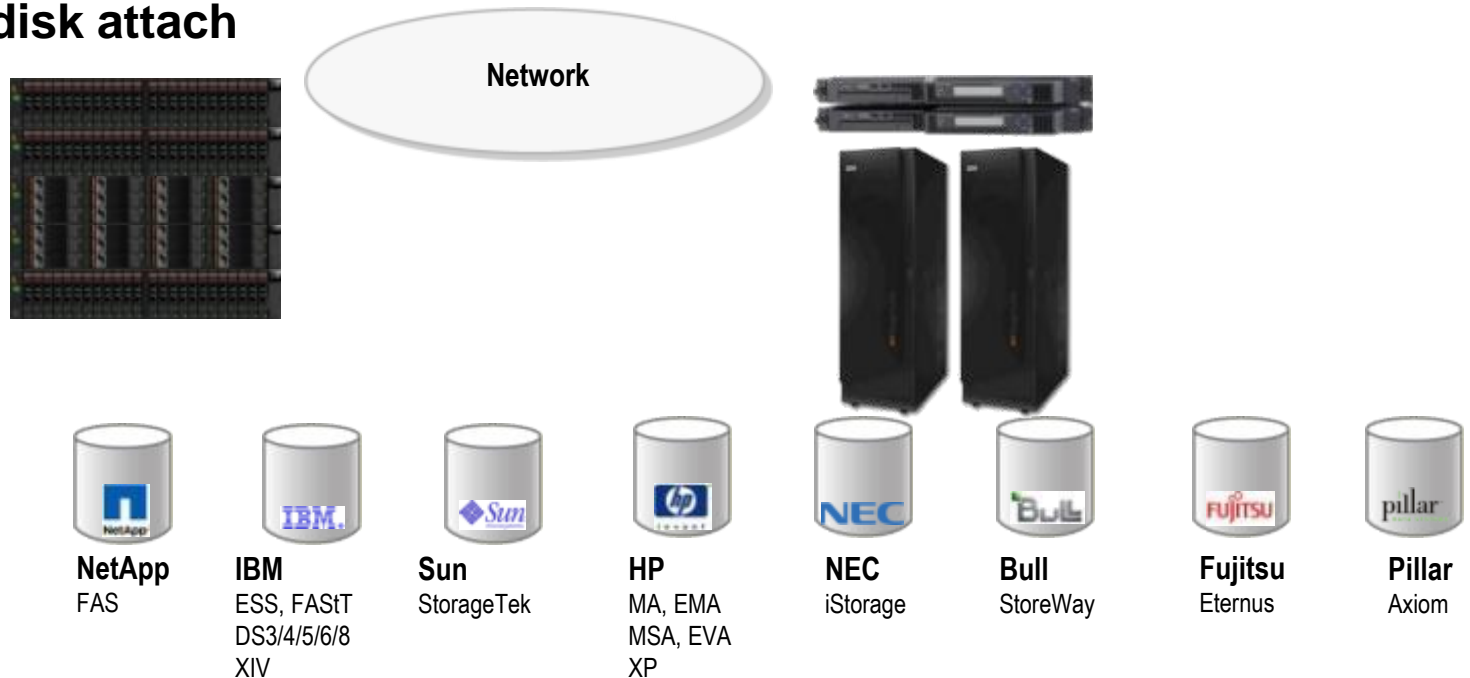
อัตโนมัติมากขึ้น

เหตุผล ที่ลูกค้าควรเลือกใช้ IBM Storwize V7000

1 : Virtualization - SVC Inside - Storage Virtualization

คือ ความสามารถในการรวมเอาอุปกรณ์จัดเก็บข้อมูลที่อยู่บนหลายเครือข่ายมารวมไว้เป็นหนึ่งเดียว และสามารถทำการบริหารจัดการข้อมูลได้จากส่วนกลาง ด้วยการนำคุณสมบัติของ SAN Volume Control (SVC) มาไว้ในตัว จึงทำให้ IBM Storwize V7000 มีความสามารถเชื่อมต่อกับสตอเรจยี่ห้ออื่นๆ ได้เลย โดยไม่ต้องซื้ออุปกรณ์เพิ่มเติม ทำให้สามารถบริหารจัดการสตอเรจที่มีอยู่ภายใต้เครือข่ายเดียวกันได้ง่าย

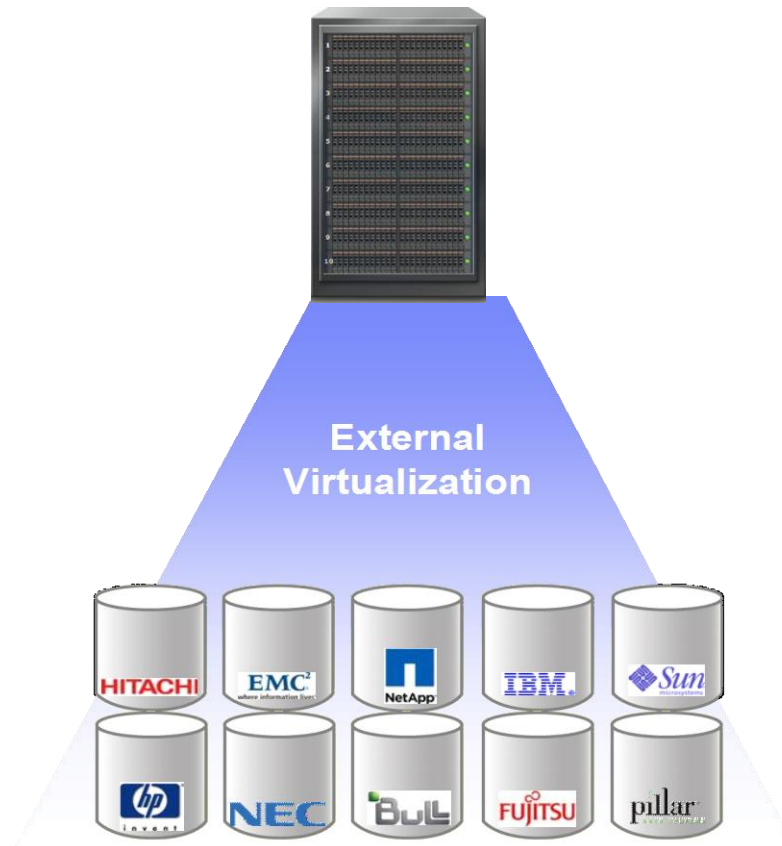
Legacy disk attach



IBM Client Use

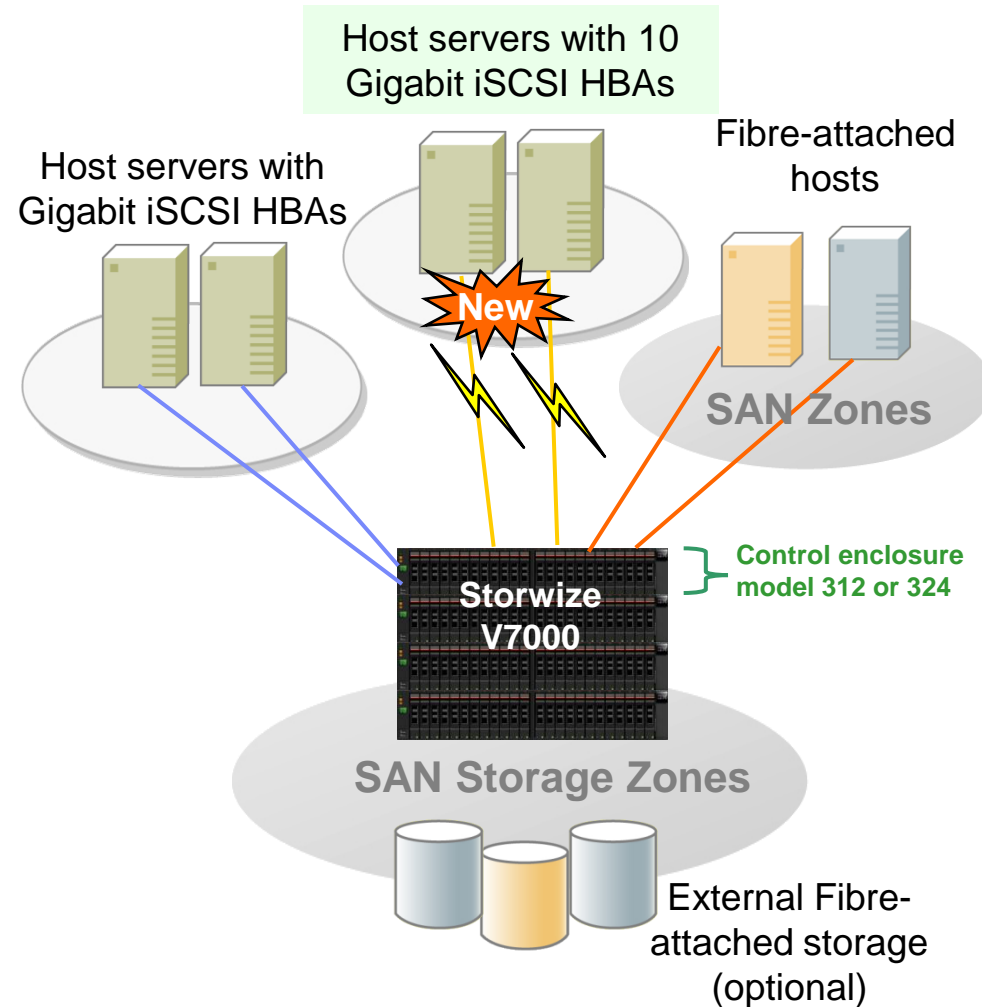
2 : Consolidation

ความสามารถในการเชื่อมต่อกับยี่ห้ออื่นได้โดยไม่ต้องการอุปกรณ์เพิ่มเติม , สามารถนำสตอเรจเดิมมาใช้งานรวมและเพิ่มพื้นที่ของดิสก์ที่ต้องการใหม่ โดยมีประเภทของดิสก์ให้เลือกใช้ตามลักษณะของข้อมูลได้แก่ SAS, Nearline-SAS และ SSD



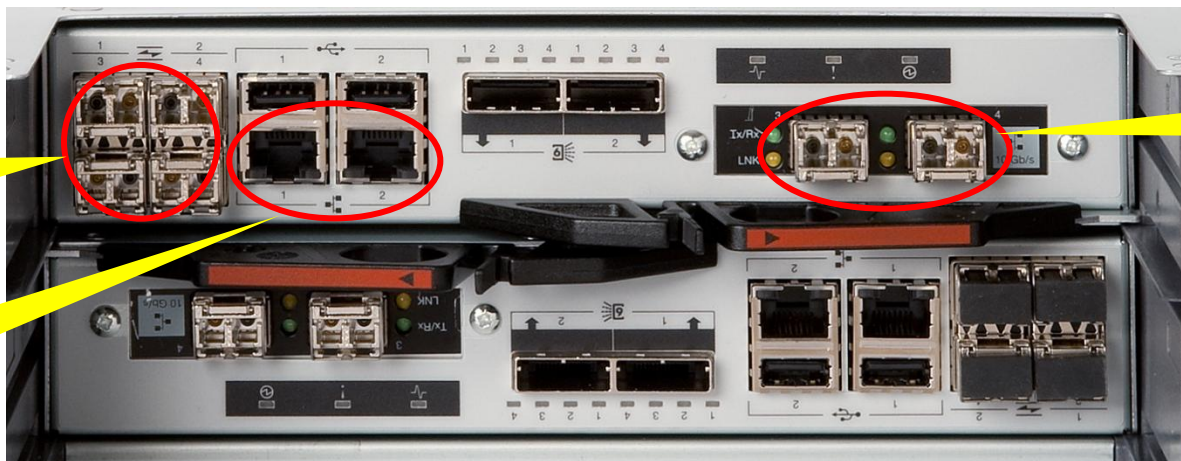
10 Gigabit iSCSI

- Server attachment to Storwize V7000 using 10 Gigabit iSCSI HBAs
- Not used for external storage attachment or system-to-system communication, which use Fibre Channel
- Enables customers to connect servers to Storwize V7000 using high-performance, lower-cost IP networks
- Improves iSCSI throughput up to 7x compared with 1 Gigabit
- Enables support for more iSCSI-attached servers, further helping reduce costs



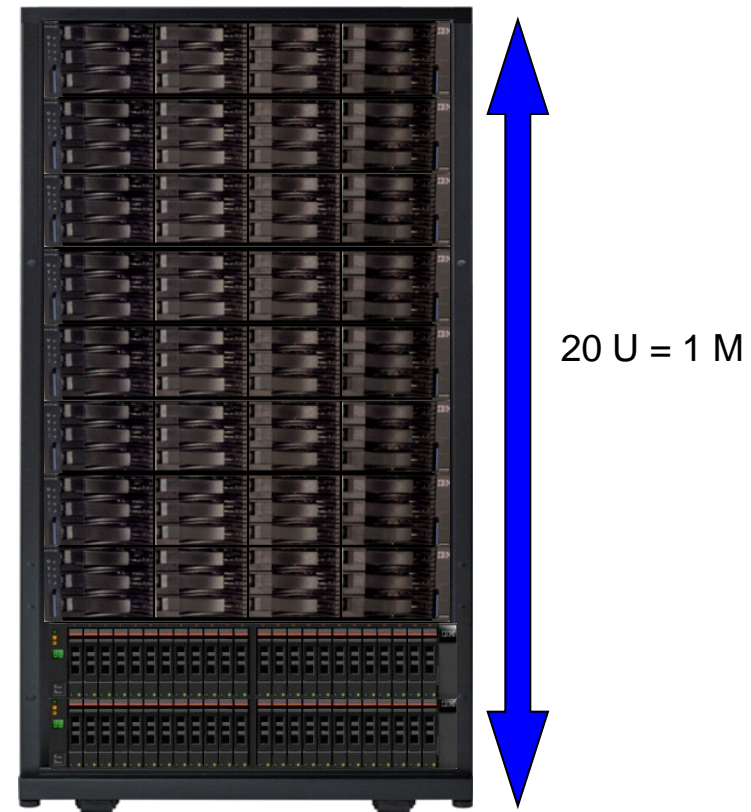
10 Gigabit iSCSI (continued)

- Delivered in **two new control enclosure** models
 - 2076-312 (twelve LFF drives)
 - 2076-324 (twenty-four SFF drives)
- Each node canister (controller) has **two 10Gbps iSCSI ports**
 - Also two 1Gbps iSCSI ports and four 8Gbps fibre channel ports
- Supported by Storwize V7000 Software **Version 6.2**
- Existing Models 112 and 124 may be upgraded without disruption to new models
 - Upgrade is *customer installed*
 - Upgrade GA August 15 (ordered in AAS as a model conversion)
- Existing control enclosure models will continue to be offered for customers not needing 10Gbps iSCSI



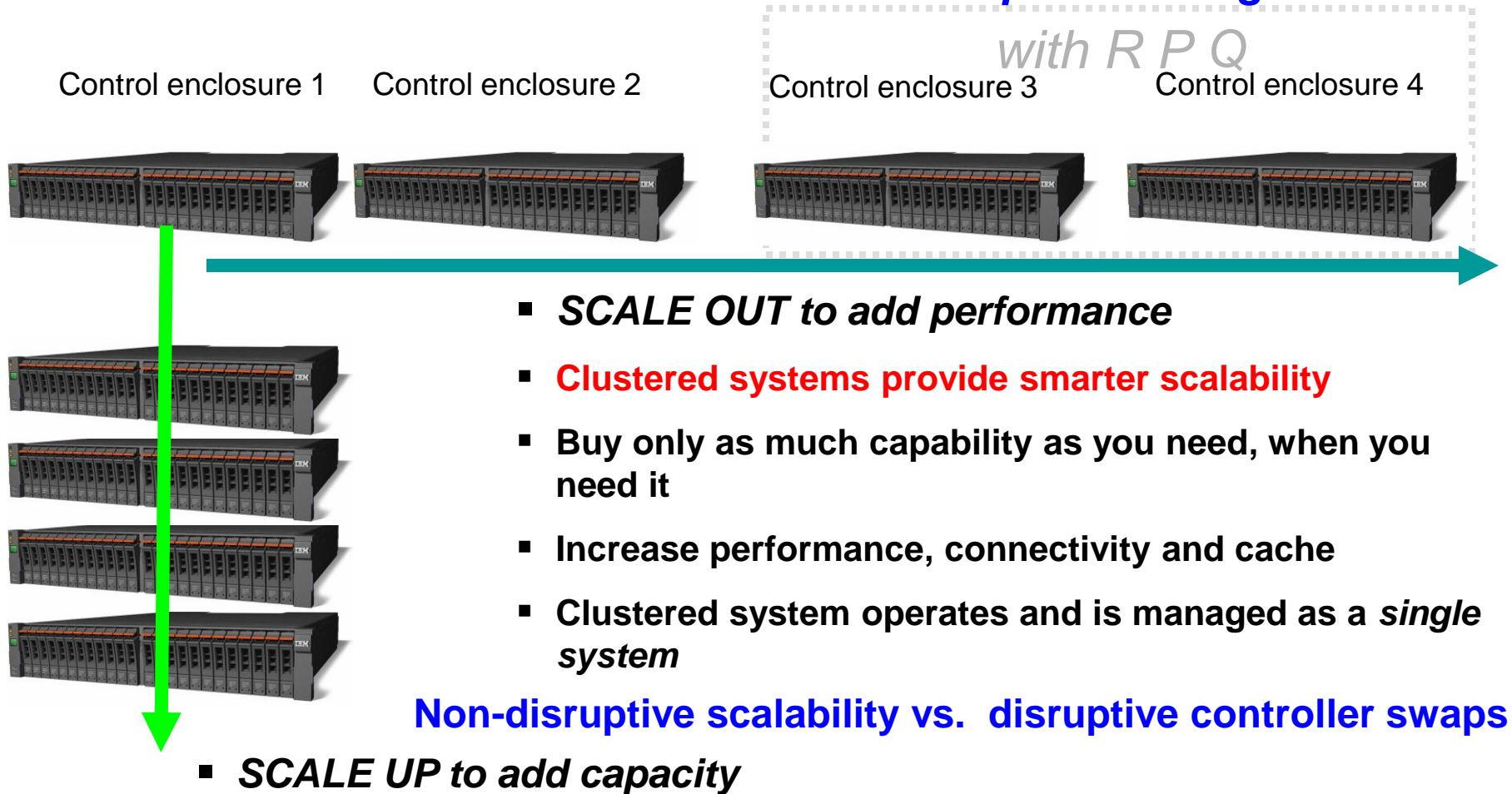
3: เปี่ยมประสิทธิภาพด้วย Small Form factor ด้วยขนาด 2U แต่มีคุณสมบัติเทียบเท่าสโตเรจในระดับ High-End สามารถใส่ดิสก์ได้มากถึง 240 ลูก โดยมีความสูงประมาณ 1 เมตร จึงช่วยประหยัดพื้นที่ Rack ช่วยให้มียพื้นที่สำหรับอุปกรณ์อื่นๆ เช่น Network Switch หรือ Server

Modular Hardware Building Blocks in 2U



Storwize V7000 Clustered Systems

Scale UP and/or OUT as business requirements grow



IBM Easy Tier™

สามารถเพิ่มประสิทธิภาพได้...

3x

โดยไม่ต้องงูน



Disk



SSD

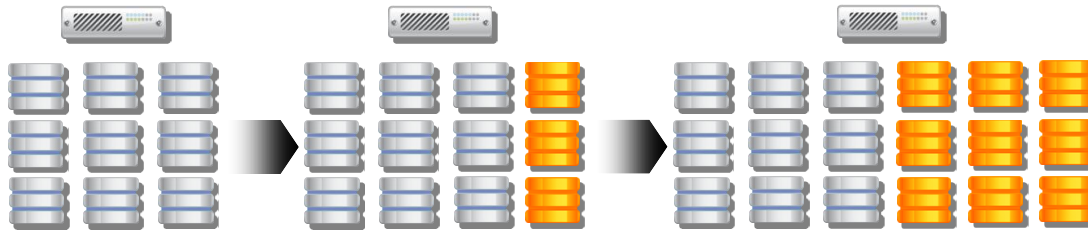
For Clients Who Need Advanced Features and Scalability



SCALABILITY

Dynamically scale ...

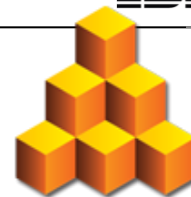
... capacity



- ✓ For high capacity applications such as archive, dynamically add capacity by adding disk enclosures.
- ✓ ...or mix with additional performance...

... features

- | | | |
|-------------------------|---------------------------------|--|
| ✓FlashCopy | ✓Practice DR recovery | <ul style="list-style-type: none"> ✓ Many features are included. ✓ Software is preinstalled in the system for easy setup. ✓ Premium features are already installed. |
| ✓SAN Visualization | ✓Automated failover / fail-back | |
| ✓Performance management | ✓Thin Provisioning | |
| ✓Metro Mirror | ✓Performance optimization | |
| ✓Global Mirror | ✓Virtualization | |



EFFICIENCY

For Clients Who Need *Efficiency*

Thin provisioning



Without thin provisioning, pre-allocated space is reserved whether the application uses it or not.

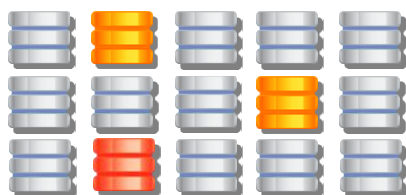


Dynamic growth

With thin provisioning, applications can grow dynamically, but only consume space they are actually using.

- ✓ More productive use of available storage.
- ✓ Across all supported host platforms.
- ✓ Improve storage utilization by

Performance optimization



Hot-spots due to poor data layout.

Transparent reorganization



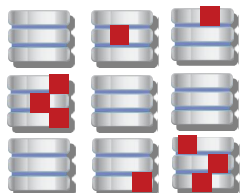
Optimized performance and throughput.

- ✓ Analyze system performance and throughput.
- ✓ Transparently rearrange the data to eliminate hot-spots and balance utilization of all components.

IBM Easy Tier SSD Management

SSDs

HDDs



Hot-spots due to poor data layout.

Automatic Relocation

SSDs

HDDs



Optimized performance and throughput.

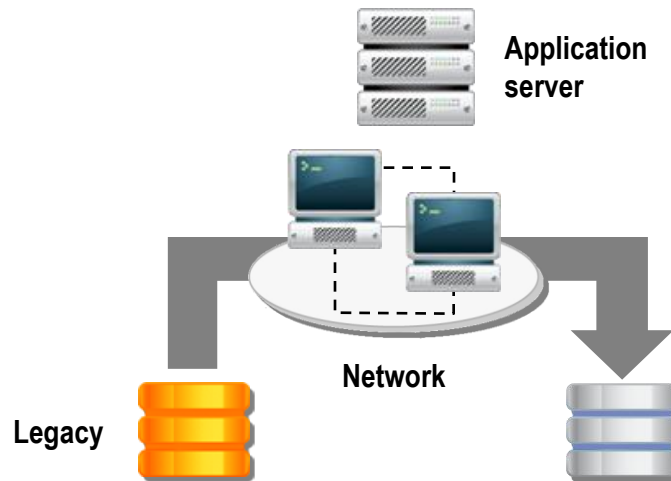
- ✓ Busiest data extents are identified and automatically relocated to highest performing Solid-state Disks
- ✓ Remaining data extents can take advantage of higher capacity, price optimized disks

For Clients Who Need Migration and High Availability



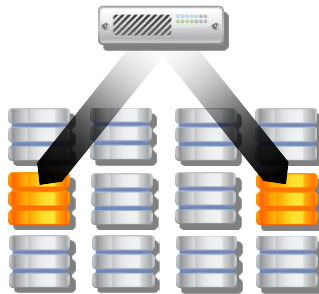
MIGRATION

Transparent data movement



- ✓ Efficiently manage technology upgrades and lease terminations by transparently moving application data from legacy disk arrays to the new system.
- ✓ Reduce migration elapsed time from weeks or months to days

Local Mirror



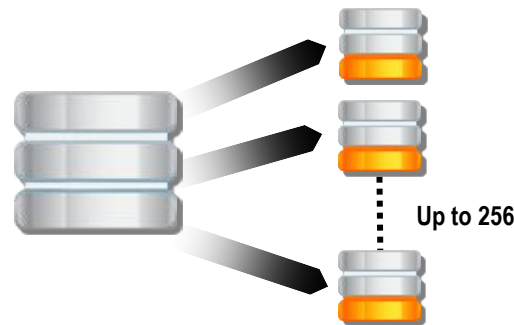
- ✓ For ultra-high availability applications, synchronously mirror application data between two separate disk enclosures attached to the same system.
- ✓ Convert volumes from "thick to thin"

For Clients Who Need *Availability*



AVAILABILITY

FlashCopy



- ✓ Create instant application copies for backup or application testing.
- ✓ Make better use of space with incremental (only changed blocks) or space-efficient (thin provisioned) snapshots.
- ✓ Reduce space required for copies by 75% or more

FlashCopy Manager

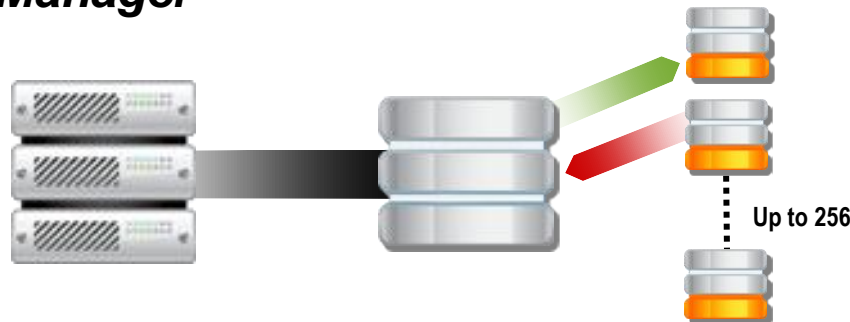
ORACLE®

DB2®

SAP®

Microsoft
SQL Server

Microsoft
Exchange
Server



- ✓ Integrated, instant copy for critical applications
- ✓ Virtually eliminate backup windows
- ✓ Rapidly create clones for application testing
- ✓ View inventory of application copies and instantly restore

Better TCO ช่วยให้ประหยัดอย่างแท้จริง

Proven IBM software functionalities

- Easy Tier (*dynamic HDD/SSD management*)
- RAID 0, 1, 5, 6, 10
- Storage virtualization (*internal and external disks*)
- Non-disruptive data migration
- Global & Metro Mirror
- FlashCopy up to 256 copies of each volume
- Thin provisioning



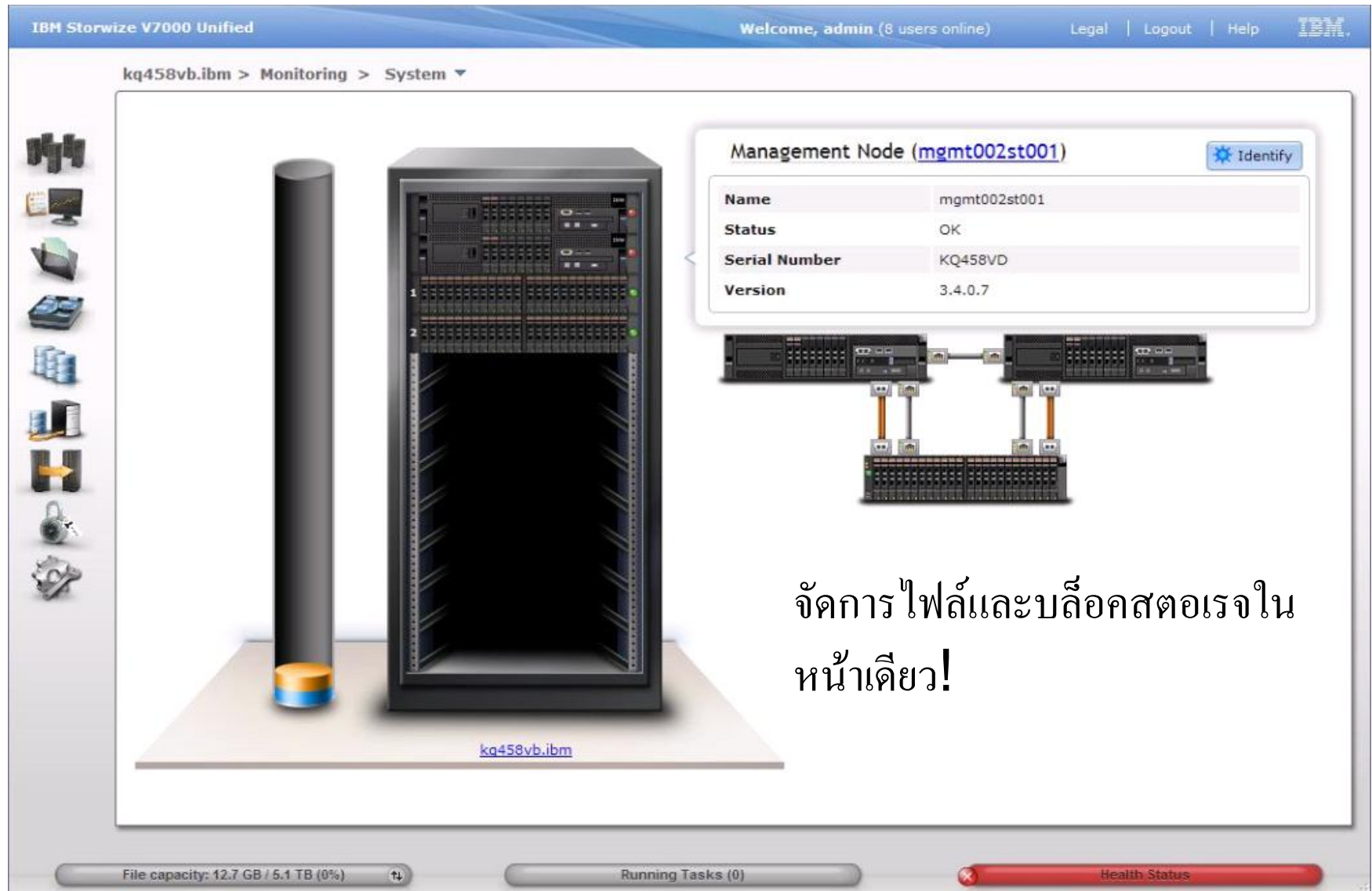
New advanced software functions

- New GUI (*easy-to-use, web based*)
- RAS services and diagnostics
- Additional host, controller and ISV interoperability
- Integration with IBM Systems Director
- Enhancements to TPC, FCM and TSM support



Admin มีเวลาไปทำ
อย่างอื่นที่มีคุณค่า
มากกว่า

มาพร้อมกับ GUI ที่ง่ายต่อการจัดการอย่างไม่น่าเชื่อ!



IBM Storwize V7000 Unified

Welcome, admin (8 users online) Legal Logout Help

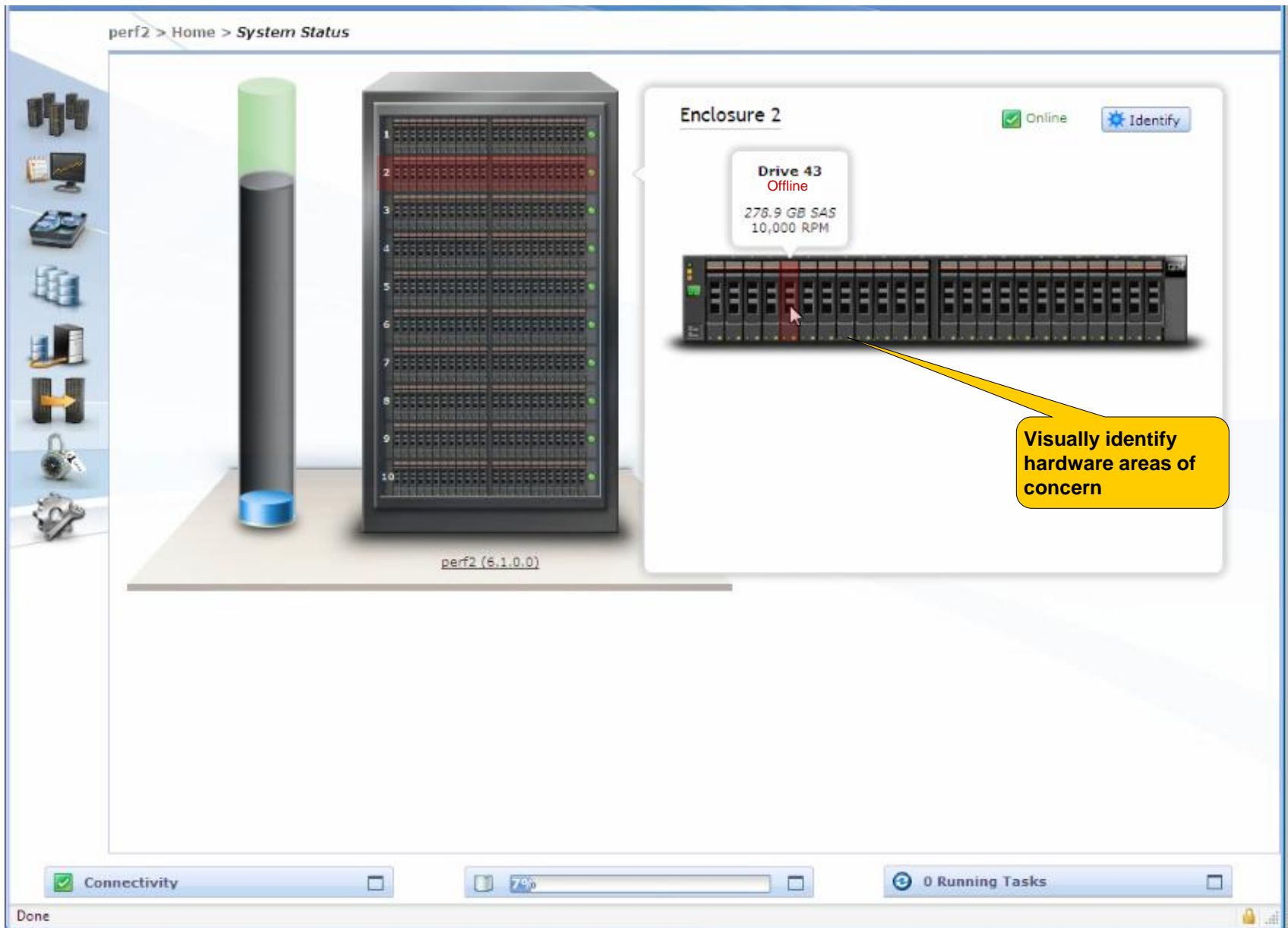
kq458vb.ibm > Monitoring > System

Management Node (mgmt002st001) [Identify](#)

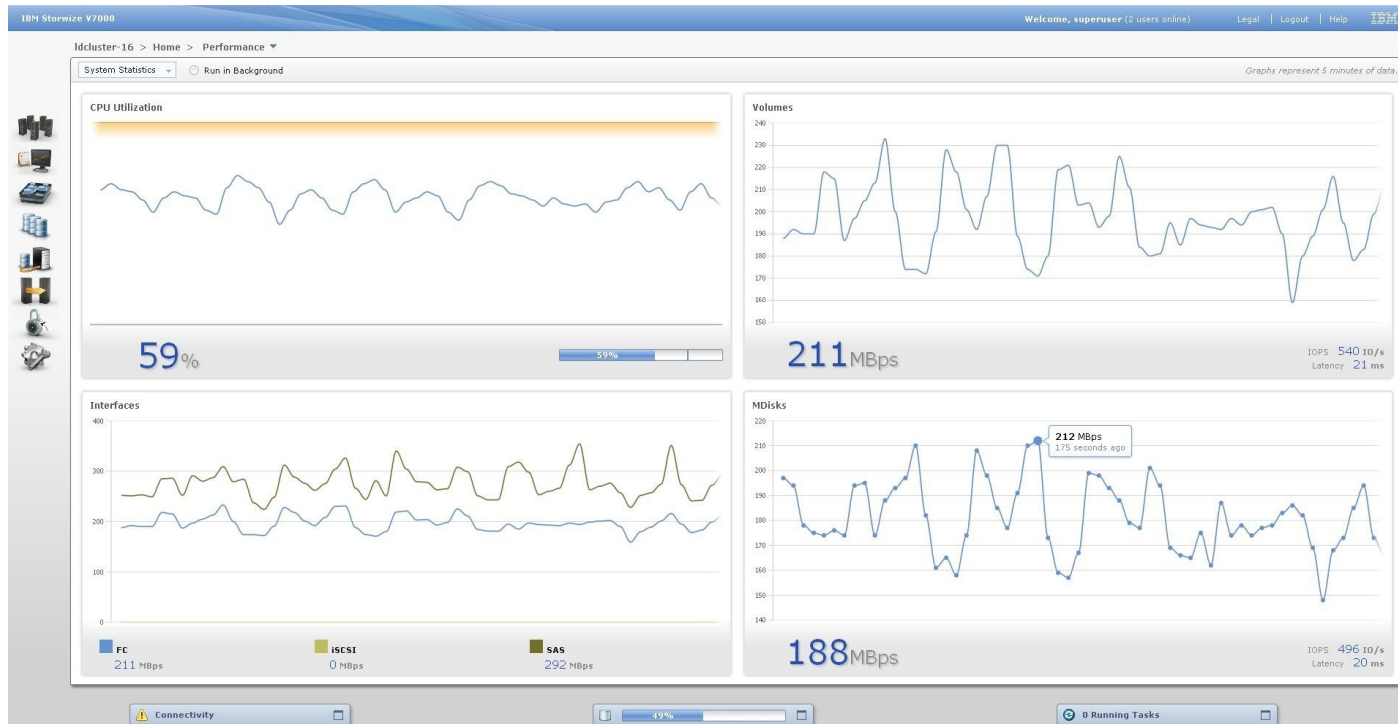
Name	mgmt002st001
Status	OK
Serial Number	KQ458VD
Version	3.4.0.7

จัดการไฟล์และบล็อกสตอเรจในหน้าเดียว!

File capacity: 12.7 GB / 5.1 TB (0%) Running Tasks (0) Health Status



Real-time Performance Statistics



- Gathers system level performance statistics (CPU utilization; port utilization and I/O rates; volume and MDisk I/O rate, bandwidth, latency) in real time with sampling rates down to 5 sec.
- Provides a snapshot view for immediate monitoring with 5-minutes of performance history
- Get “immediate” monitoring during environmental changes
- Troubleshoot sudden drops in performance
- Pair up with TPC for complete performance solutions

IBM Systems Director Storage Control

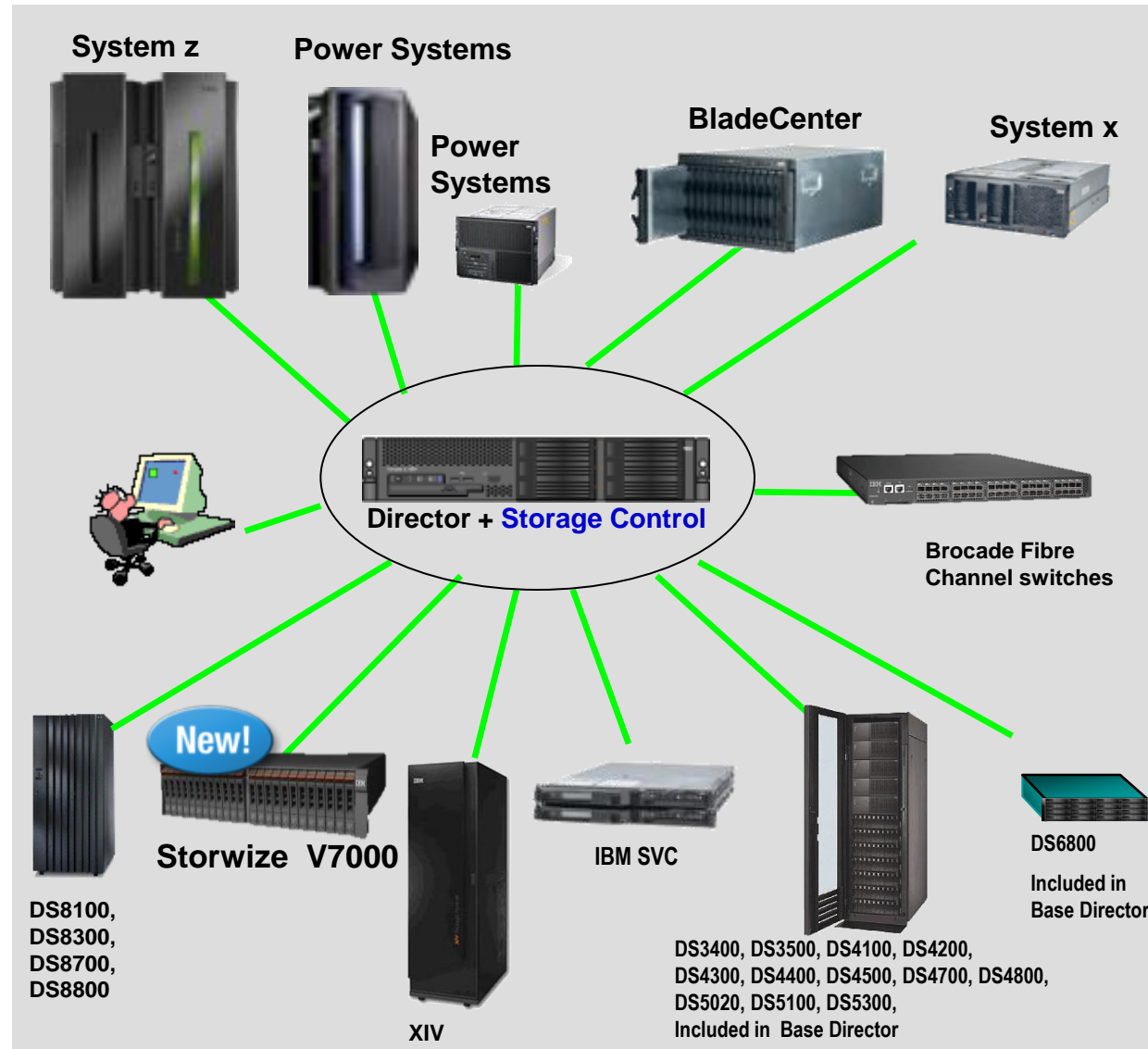
Centralized management to reduces costs and complexity across server and storage

Integrated:

- ✓ Discovery
- ✓ Inventory
- ✓ Alerts
- ✓ Monitoring
- ✓ Configuration
- ✓ Provisioning

With VMControl:

- ✓ Integrated virtualization management across server, storage, network
- ✓ Image repository and management: Storage provisioning for image creation, deployment, and cloning
- ✓ Storage System Pools: Manage storage system pool lifecycle, take group actions across pool and policy based storage placement, provisioning, and cloning actions within the pool



Replication Features Overview

■ IP Replication (*)

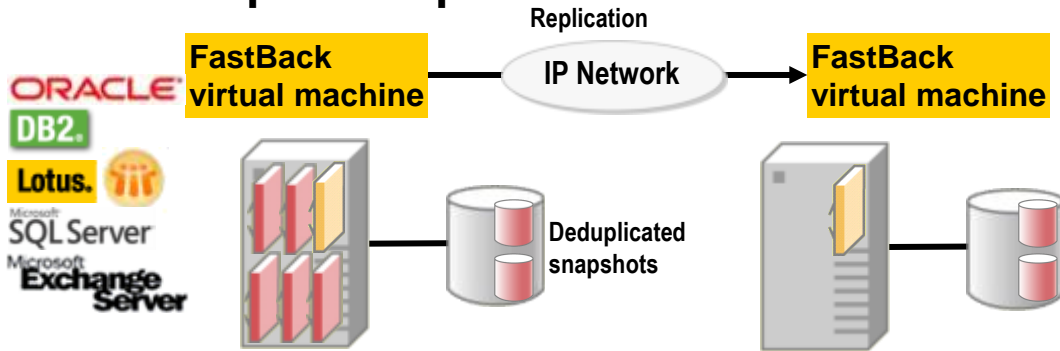
- Application-integrated capabilities for clients needing instant recovery with cost-optimized disaster recovery options

■ Fibre Channel Replication

- Application-integrated capabilities for clients needing instant recovery with full-featured enterprise replication solutions

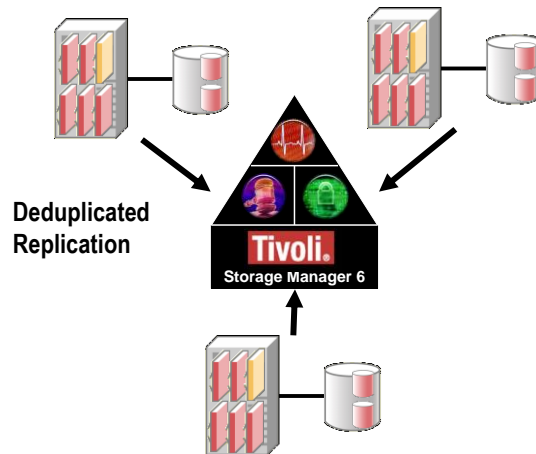
IP Replication Features

Snapshot replication



- ✓ Create instant copies of applications or file systems for backup
- ✓ Make better use of space with incremental (only changed blocks) and deduplicated snapshots
- ✓ Replicate snapshots off-site for disaster recovery

Enterprise snapshot replication



- ✓ For enterprise and branch office configurations
- ✓ Replicate distributed snapshots to a central Tivoli Storage Manager server for Unified Recovery Management and disaster recovery
- ✓ Make better use of network resources by deduplicating data before transmission

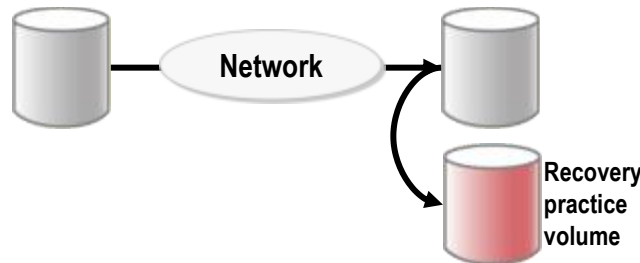
Fibre Channel Mirroring Features

Mirror data off-site



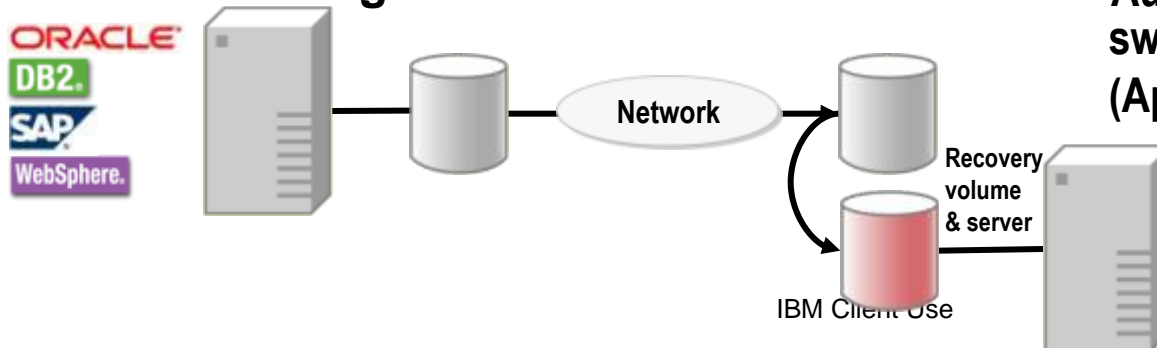
- ✓ Synchronously over Metro distances
- ✓ Asynchronously over Global distances
- ✓ Application-level consistency groups

Practice and Automatically Respond to Disasters



- ✓ For critical application consistency groups, freeze the Mirror and take a consistent FlashCopy
- ✓ Practice application recovery procedures from the FlashCopy
- ✓ Detect mirroring failure and automate failover to Recovery volume

Site Switching Automation



- ✓ Monitor and manage IT-wide site switching from a single console (Applications, servers, and storage)
- ✓ Automate fail back after repair

IBM Storwize V7000 Value

- **Very compact packaging:** controllers and disk in just 2U
 - Half to one-third rack space required by EMC CLARiiON CX4-240
- **Completely new GUI** based on well-received XIV GUI
 - Provision a volume in as few as six clicks; setup system in as few as ten clicks
 - Proven to be very easy even for novice users in UCD tests
- **Enterprise-class capability**
 - Sophisticated local and remote mirroring
 - Integrated server and storage management
- **High performance** in a midrange disk system
 - Up to almost 1M IOPS
 - Up to 82,000 IOPS for “database-like” 70/30 R/W workload
- Integrated **non disruptive migration function**
 - Speeds time-to-value from weeks or months to just days
 - Minimizes downtime for migration
 - Eliminates cost of add-on migration tools
- Integrated no-charge **Easy Tier** function
 - Application throughput improved up to 200%, up to 30% improved response time
- Integrated no-charge **thin provisioning** function
 - Reduce disk capacity required by 20% or more; reduce disk capacity for copies by 75% or more
- Similar benefits to SVC when **virtualizing external storage**

Thank You

For more information, please visit
ibm.com/storage/storwizev7000

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